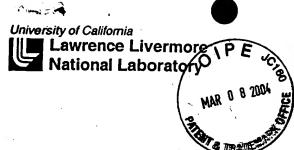
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# RECORD OF INVENTION

LLNL File No.

This invention was made in the course of or under prime Contract No. W-7405-ENG-48 between the U.S. Department of Energy and the University of California. This Record of Invention is prepared for the Office of the Assistant General Counsel for Patents, U.S. Department of Energy.

I. Title of the Invention	BECEIVED
Building Airspace Protection System	12 2004
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II. Inventor Information

LUNL Inventor(s) (F M L)	Title/Position	Directorate	Payroll Acc	1 Phone #	Mail Stop
Raymond P. Mariella Jr.	Engineer	Engineering	9655	2-8905	L-222
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Non-LLNL Inventor(s) (F M L)	Title/Position	Employer	Phone #	Fax#	Subcontract #
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#### III. Abstract

A system is proposed that would protect the occupants of a building or other area with an enclosed airspace from the release of harmful aerosol particles, including pathogens. It would use a continuously-operating, autonomous aerosol sensor followed by a high-performance electrostatic precipitator that would be activated if the sensor detected a potentially harmful substance in the air. This would be similar, in some respect, to a smoke alarm connected to a water sprinkler system - that is, it would sense a threat and eliminate it. The damage to a building's furnishings would be less for the APDS/EP system, however!

IV. Uses of the Inventi	V.	. Us	es of	fthe	Inve	ention	1
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LLNL or Government uses or possibilities for use:

Any populated, enclosed space, which has air supplied through a ventilation duct is a potential application.

Commercial or other uses or possibilities for use:

Any populated, enclosed space, which has air supplied through a ventilation duct is a potential application.



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V. Documents Describing the Invention

Documents, publications, and presentations describing the invention that you have published or prepared for publication, or presented on the subject. Also include presentations and publications planned within one year from now. Please attach a copy of preprints, articles, or viewgraphs.

Title/Subject		Date	Publication #
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VI. Documents Describing Prior Art (Please include copies of these documents.) Related Documents (including patents, other publications) Please include patent numbers, authors, title, publication date, etc.	

VII. Background

Background of the invention, including technical problems addressed by it:

For at least 3 years, now, we (at LLNL) have been trying to invent an autonomous pathogen detection system (APDS). This would be used to monitor the air inside of an enclosed airspace that is a gathering area for people - it could be an office building, an event center, or whatever. It would be used to determine if a terrorist were to release an aerosolized pathogen into the ventilation system of a building. We have made good progress, but there has always been a nagging question - what do you recommend as an action, if a real pathogen is detected? Most people will not have a HEPA-filtered mask available (and would not be properly-fitted, trained, etc., for its use, anyway). I have thought for some time that a prophylactic approach could avoid the problem - filter all of the building air supply. This is impractical. While mulling this over (bicycling off-site at noon approach that may work. After a few days of pondering, it still sounds OK, so I am writing this disclosure.



Page 3

LLNL File No.

VIII. Invention Description

Description of the invention (you may also attach a paper). Please include a sketch of the invention, if possible.

Install a large electrostatic precipitator (EP) downsteam of the APDS and, upon first warning, switch the EP on! When not activated, the EP would present very little constriction to the overall airflow in the HVAC system of the building, and the maintenance costs would be minimal (perhaps once per year the accumulated deposits might need to be washed off). Moreover, the APDS/EP combination would have one fail-safe property, if the EP were connected to the same electrical circuit as the blower on the HVAC system - if the electricity failed on the EP, so that it could not trap the pathogen, the blower would not be pushing the pathogen towards the people, either. Such a system would have the added feature that it would archive the sample for later analysis, although viability might not be maintained. The APDS could determine this from its more gentle capture process, anyway, at its leasure, since the people would not be being exposed while it was performing the viability assay.



Page 4

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Send the completed and signed form to the Patent Group at L-703



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XIII. Invention Use and Disc		·	
Has the invention been put into use? Yes	No If yes, explain		
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W. Classification Review Basis for unclassified release: Outside scope of AEA and EO			
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